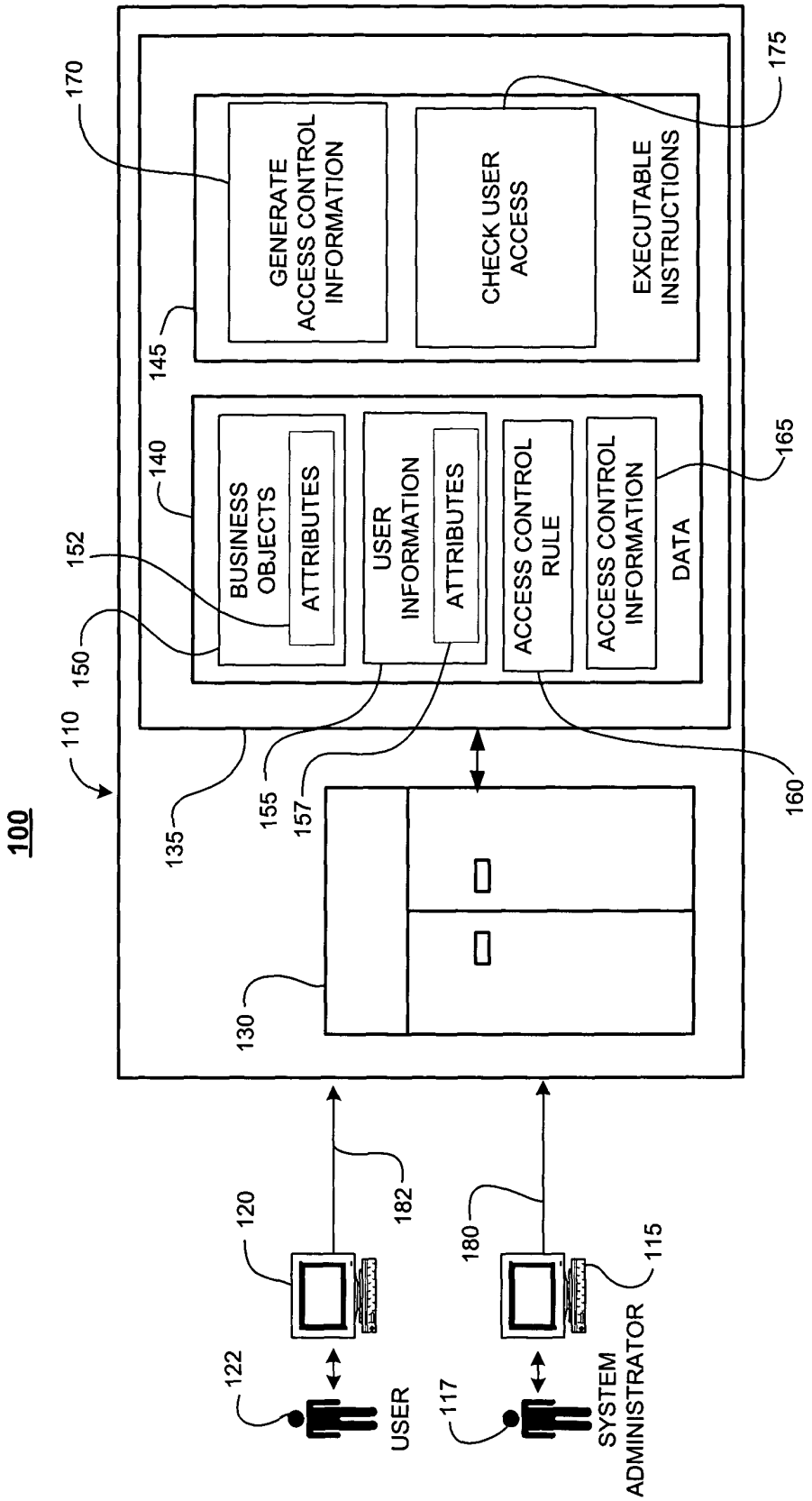
100
110
170
GENERATE ACCESS CONTROL INFORMATION
CHECK USER ACCESS
EXECUTABLE INSTRUCTIONS
175
145
140
BUSINESS OBJECTS
ATTRIBUTES
USER INFORMATION
ATTRIBUTES
ACCESS CONTROL RULE
ACCESS CONTROL INFORMATION
DATA
165
152
150
135
155
157
160
130
120
182
180
115
122
117
USER
SYSTEM ADMINISTRATOR

FIG. 1

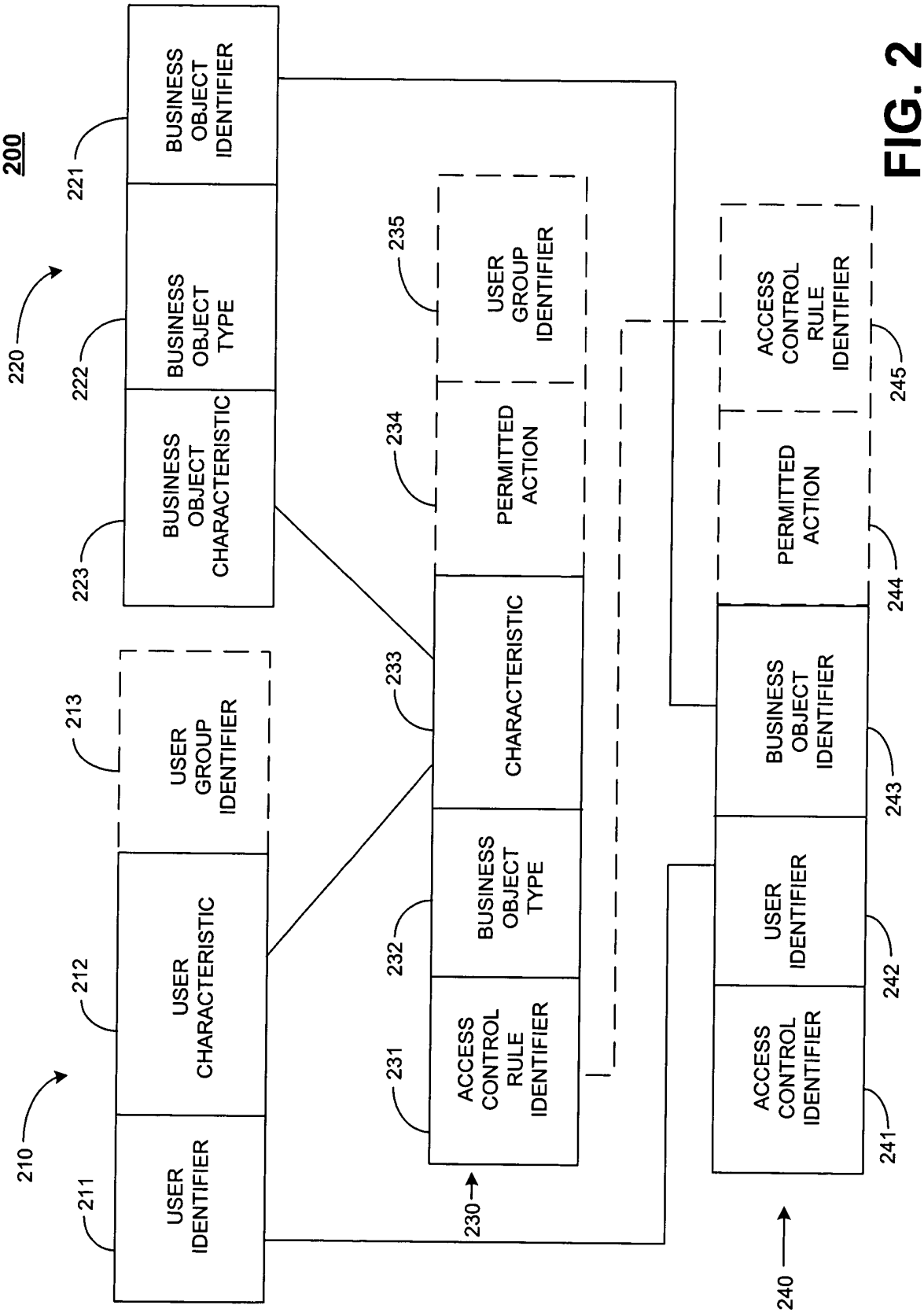
200
210
USER IDENTIFIER
211
USER CHARACTERISTIC
212
USER GROUP IDENTIFIER
213
220
BUSINESS OBJECT CHARACTERISTIC
223
BUSINESS OBJECT TYPE
222
BUSINESS OBJECT IDENTIFIER
221
230
ACCESS CONTROL RULE IDENTIFIER
231
BUSINESS OBJECT TYPE
232
CHARACTERISTIC
233
PERMITTED ACTION
234
USER GROUP IDENTIFIER
235
240
ACCESS CONTROL IDENTIFIER
241
USER IDENTIFIER
242
BUSINESS OBJECT IDENTIFIER
243
PERMITTED ACTION
244
ACCESS CONTROL RULE IDENTIFIER
245

FIG. 2

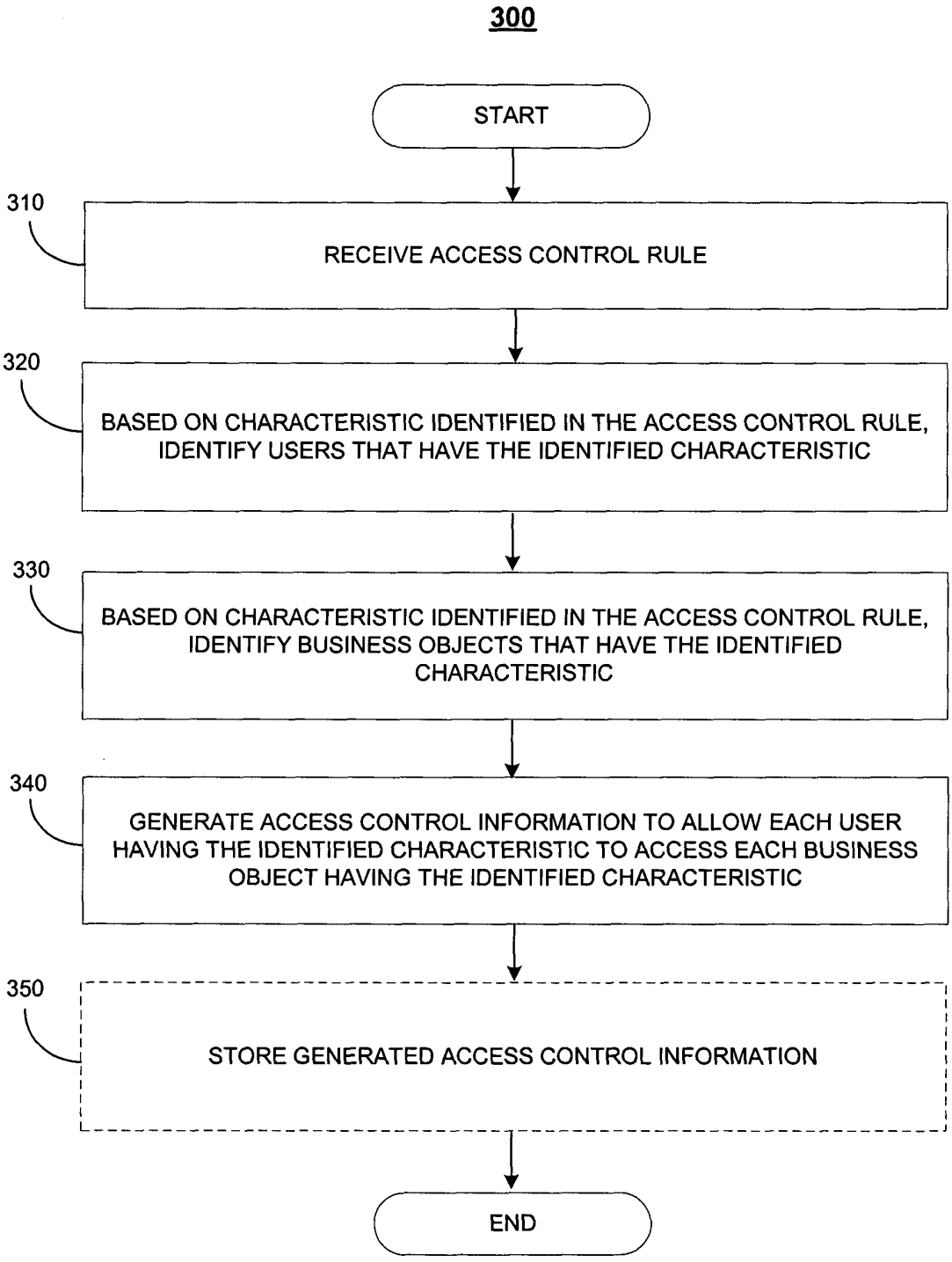
300
START
310
RECEIVE ACCESS CONTROL RULE
320
BASED ON CHARACTERISTIC IDENTIFIED IN THE ACCESS CONTROL RULE, IDENTIFY USERS THAT HAVE THE IDENTIFIED CHARACTERISTIC
330
BASED ON CHARACTERISTIC IDENTIFIED IN THE ACCESS CONTROL RULE, IDENTIFY BUSINESS OBJECTS THAT HAVE THE IDENTIFIED CHARACTERISTIC
340
GENERATE ACCESS CONTROL INFORMATION TO ALLOW EACH USER HAVING THE IDENTIFIED CHARACTERISTIC TO ACCESS EACH BUSINESS OBJECT HAVING THE IDENTIFIED CHARACTERISTIC
350
STORE GENERATED ACCESS CONTROL INFORMATION
END

FIG. 3

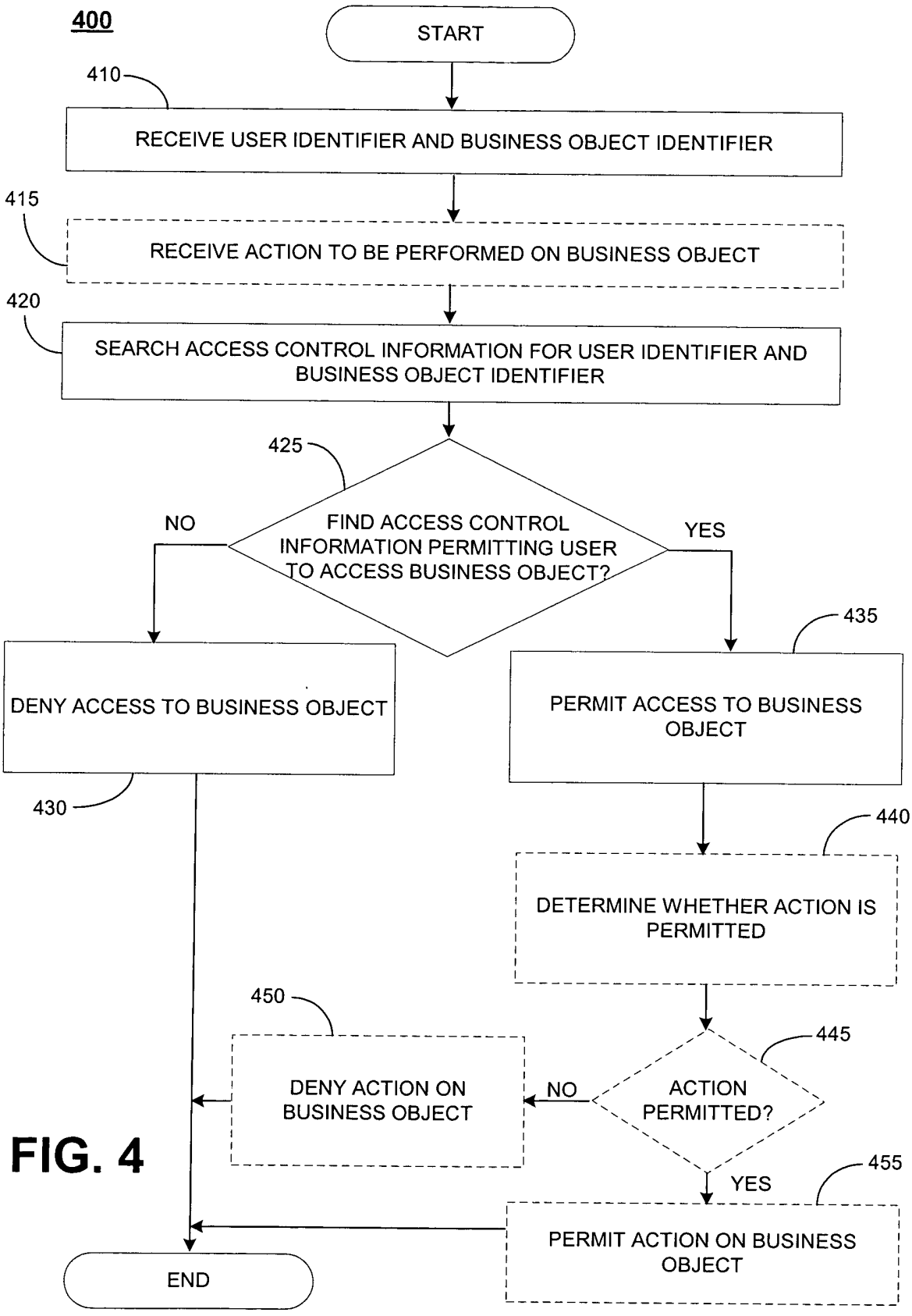
400
START
410
RECEIVE USER IDENTIFIER AND BUSINESS OBJECT IDENTIFIER
415
RECEIVE ACTION TO BE PERFORMED ON BUSINESS OBJECT
420
SEARCH ACCESS CONTROL INFORMATION FOR USER IDENTIFIER AND BUSINESS OBJECT IDENTIFIER
425
FIND ACCESS CONTROL INFORMATION PERMITTING USER TO ACCESS BUSINESS OBJECT?
NO
YES
DENY ACCESS TO BUSINESS OBJECT
430
435
PERMIT ACCESS TO BUSINESS OBJECT
440
DETERMINE WHETHER ACTION IS PERMITTED
445
ACTION PERMITTED?
NO
450
DENY ACTION ON BUSINESS OBJECT
YES
455
PERMIT ACTION ON BUSINESS OBJECT
END

FIG. 4

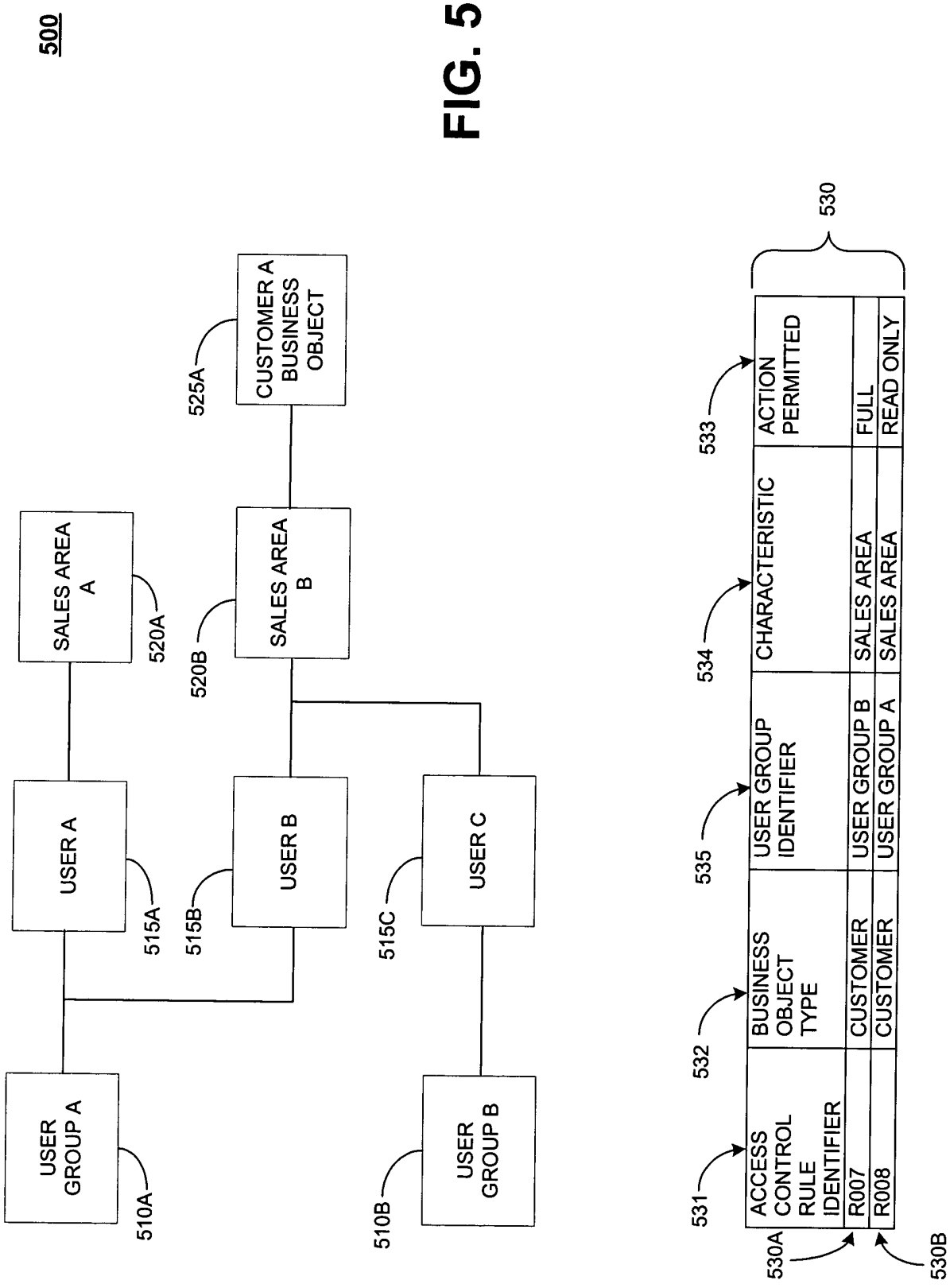
500
USER GROUP A
510A
USER GROUP B
510B
USER A
515A
USER B
515B
USER C
515C
SALES AREA A
520A
SALES AREA B
520B
CUSTOMER A BUSINESS OBJECT
525A
530
531
532
535
534
533
ACCESS CONTROL RULE IDENTIFIER
BUSINESS OBJECT TYPE
USER GROUP IDENTIFIER
CHARACTERISTIC
ACTION PERMITTED
R007
CUSTOMER
USER GROUP B
SALES AREA
FULL
R008
CUSTOMER
USER GROUP A
SALES AREA
READ ONLY
530A
530B

FIG. 5

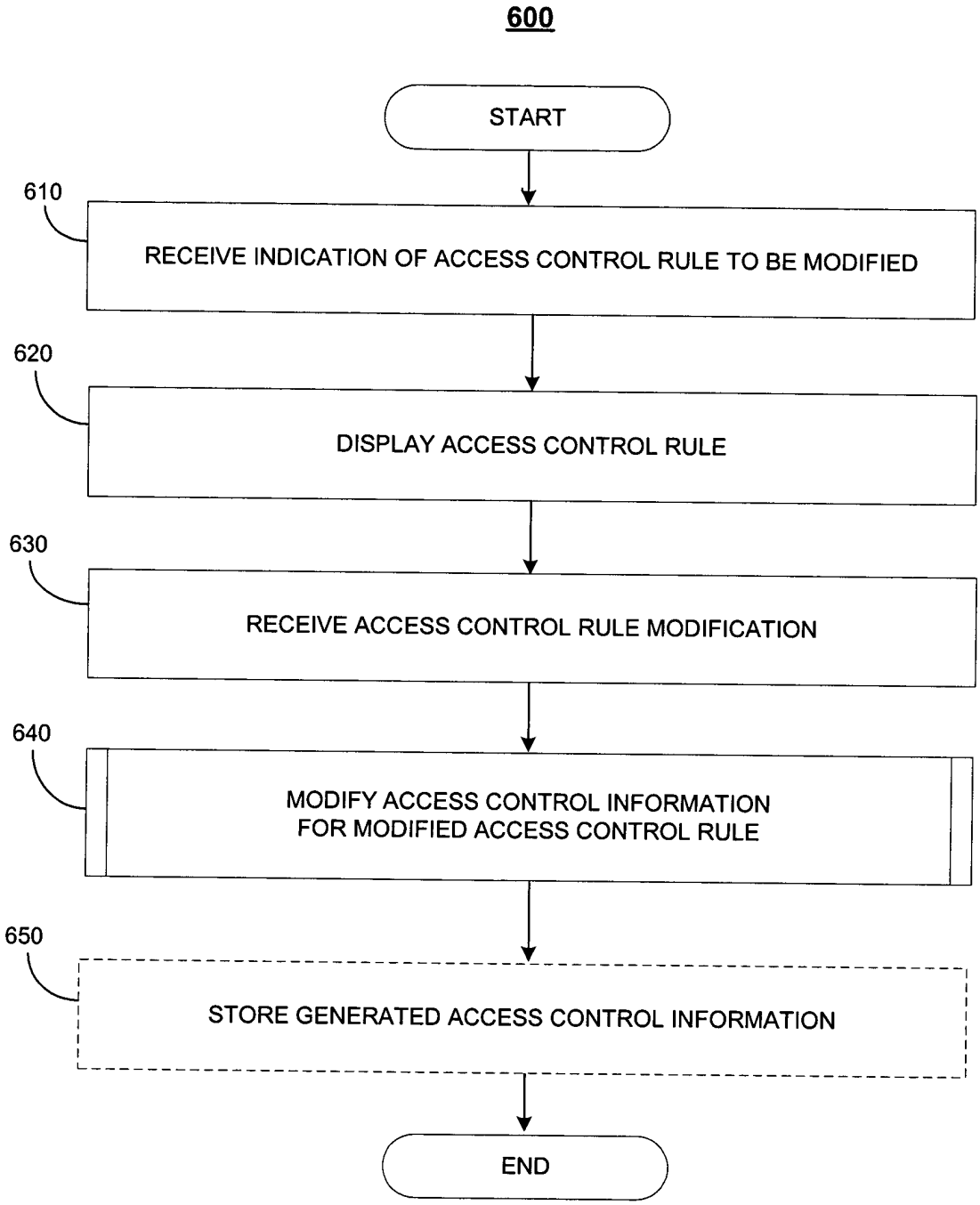
600
START
610
RECEIVE INDICATION OF ACCESS CONTROL RULE TO BE MODIFIED
620
DISPLAY ACCESS CONTROL RULE
630
RECEIVE ACCESS CONTROL RULE MODIFICATION
640
MODIFY ACCESS CONTROL INFORMATION FOR MODIFIED ACCESS CONTROL RULE
650
STORE GENERATED ACCESS CONTROL INFORMATION
END

FIG. 6

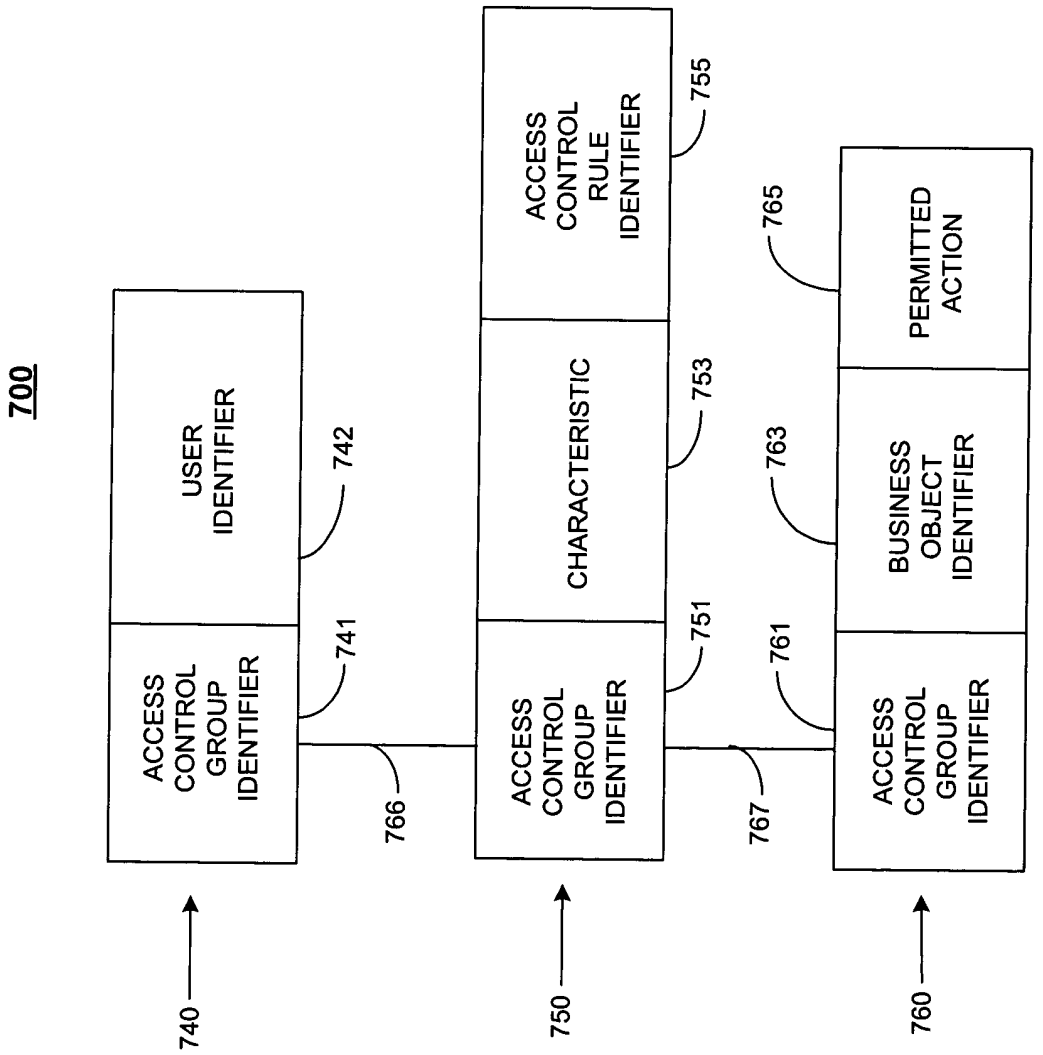
700
740
750
760
ACCESS CONTROL GROUP IDENTIFIER
USER IDENTIFIER
741
742
766
ACCESS CONTROL GROUP IDENTIFIER
CHARACTERISTIC
751
753
767
ACCESS CONTROL RULE IDENTIFIER
755
ACCESS CONTROL GROUP IDENTIFIER
761
BUSINESS OBJECT IDENTIFIER
763
PERMITTED ACTION
765

FIG. 7

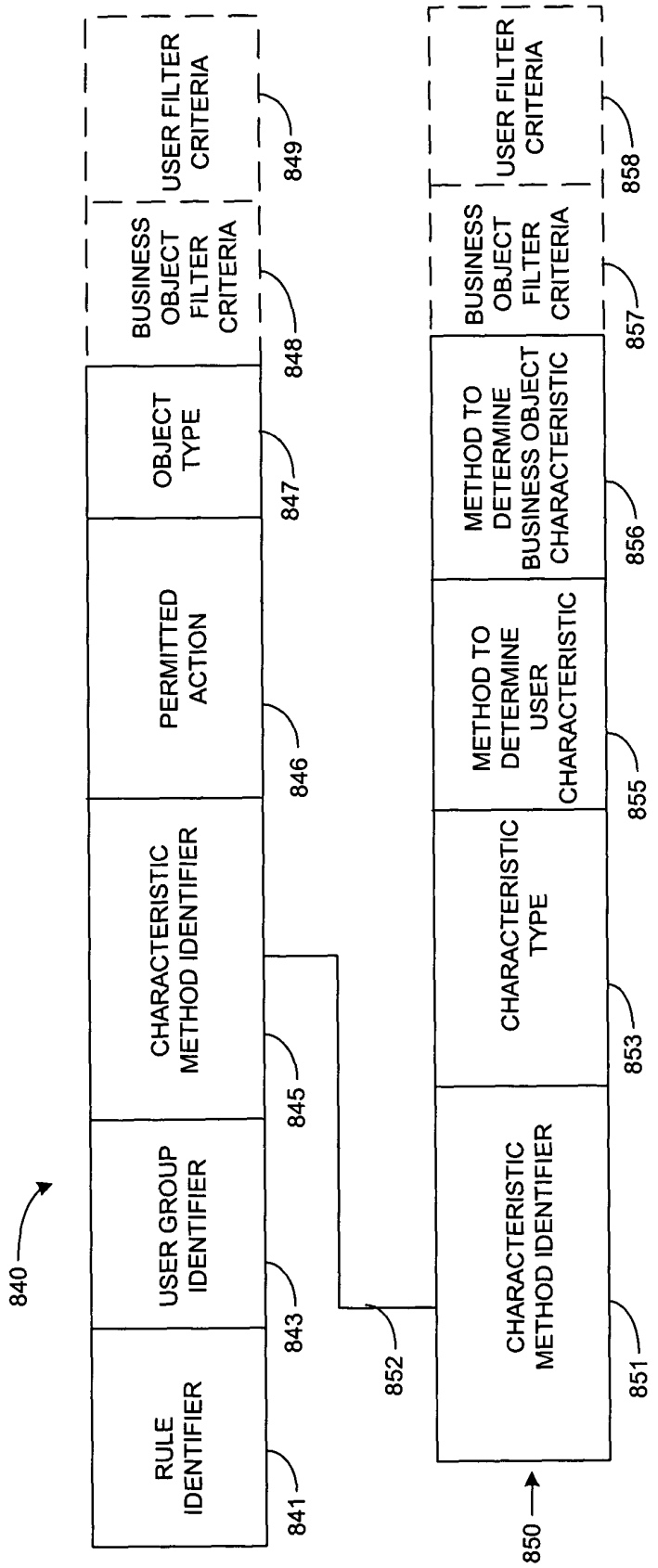
800
840
RULE IDENTIFIER
USER GROUP IDENTIFIER
CHARACTERISTIC METHOD IDENTIFIER
PERMITTED ACTION
OBJECT TYPE
BUSINESS OBJECT FILTER CRITERIA
USER FILTER CRITERIA
841
843
845
846
847
848
849
850
CHARACTERISTIC METHOD IDENTIFIER
CHARACTERISTIC TYPE
METHOD TO DETERMINE USER CHARACTERISTIC
METHOD TO DETERMINE BUSINESS OBJECT CHARACTERISTIC
BUSINESS OBJECT FILTER CRITERIA
USER FILTER CRITERIA
851
852
853
855
856
857
858

FIG. 8

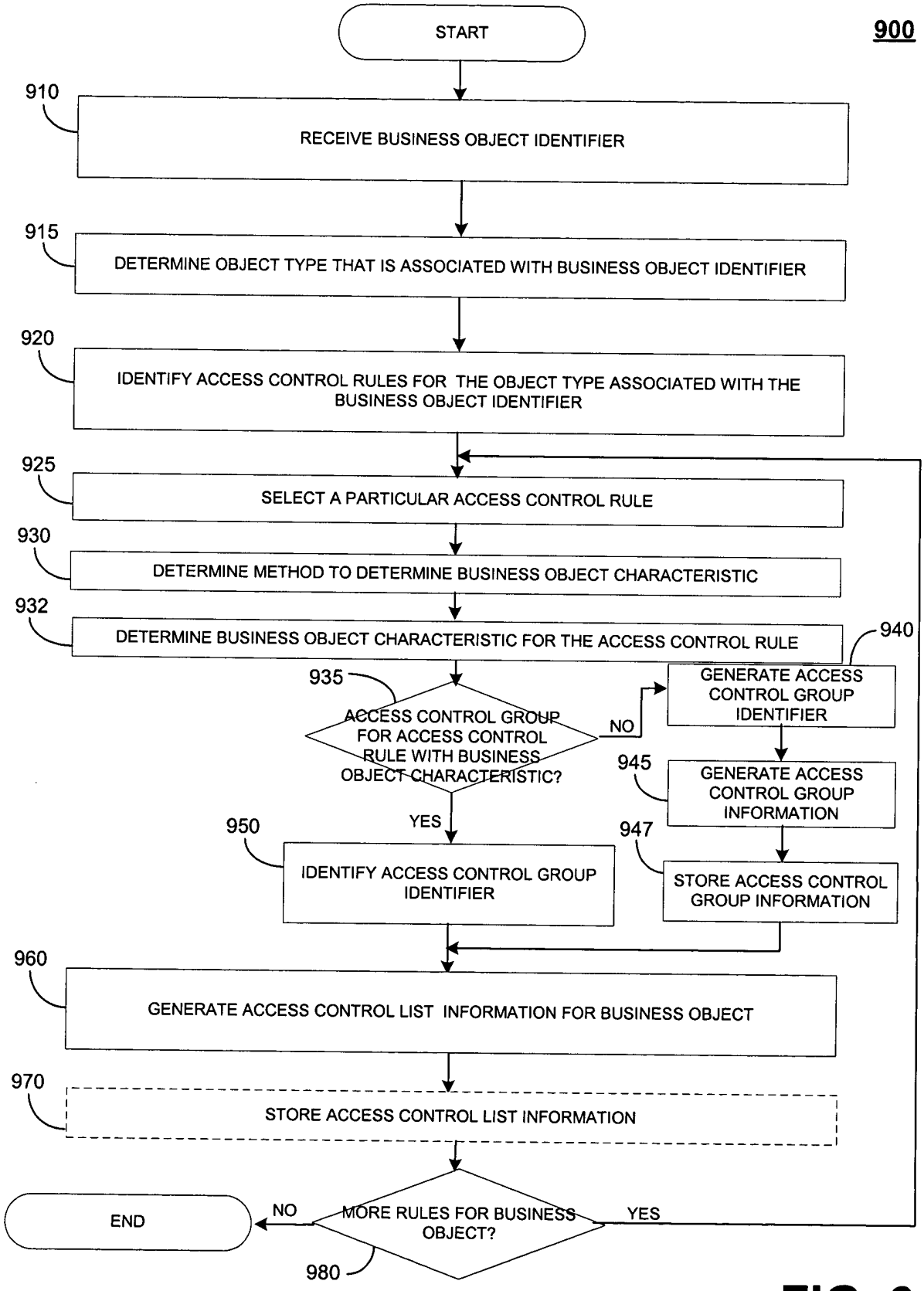
900
START
910
RECEIVE BUSINESS OBJECT IDENTIFIER
915
DETERMINE OBJECT TYPE THAT IS ASSOCIATED WITH BUSINESS OBJECT IDENTIFIER
920
IDENTIFY ACCESS CONTROL RULES FOR THE OBJECT TYPE ASSOCIATED WITH THE BUSINESS OBJECT IDENTIFIER
925
SELECT A PARTICULAR ACCESS CONTROL RULE
930
DETERMINE METHOD TO DETERMINE BUSINESS OBJECT CHARACTERISTIC
932
DETERMINE BUSINESS OBJECT CHARACTERISTIC FOR THE ACCESS CONTROL RULE
935
ACCESS CONTROL GROUP FOR ACCESS CONTROL RULE WITH BUSINESS OBJECT CHARACTERISTIC?
NO
940
GENERATE ACCESS CONTROL GROUP IDENTIFIER
945
GENERATE ACCESS CONTROL GROUP INFORMATION
947
STORE ACCESS CONTROL GROUP INFORMATION
YES
950
IDENTIFY ACCESS CONTROL GROUP IDENTIFIER
960
GENERATE ACCESS CONTROL LIST INFORMATION FOR BUSINESS OBJECT
970
STORE ACCESS CONTROL LIST INFORMATION
MORE RULES FOR BUSINESS OBJECT?
NO
YES
980
END

FIG. 9

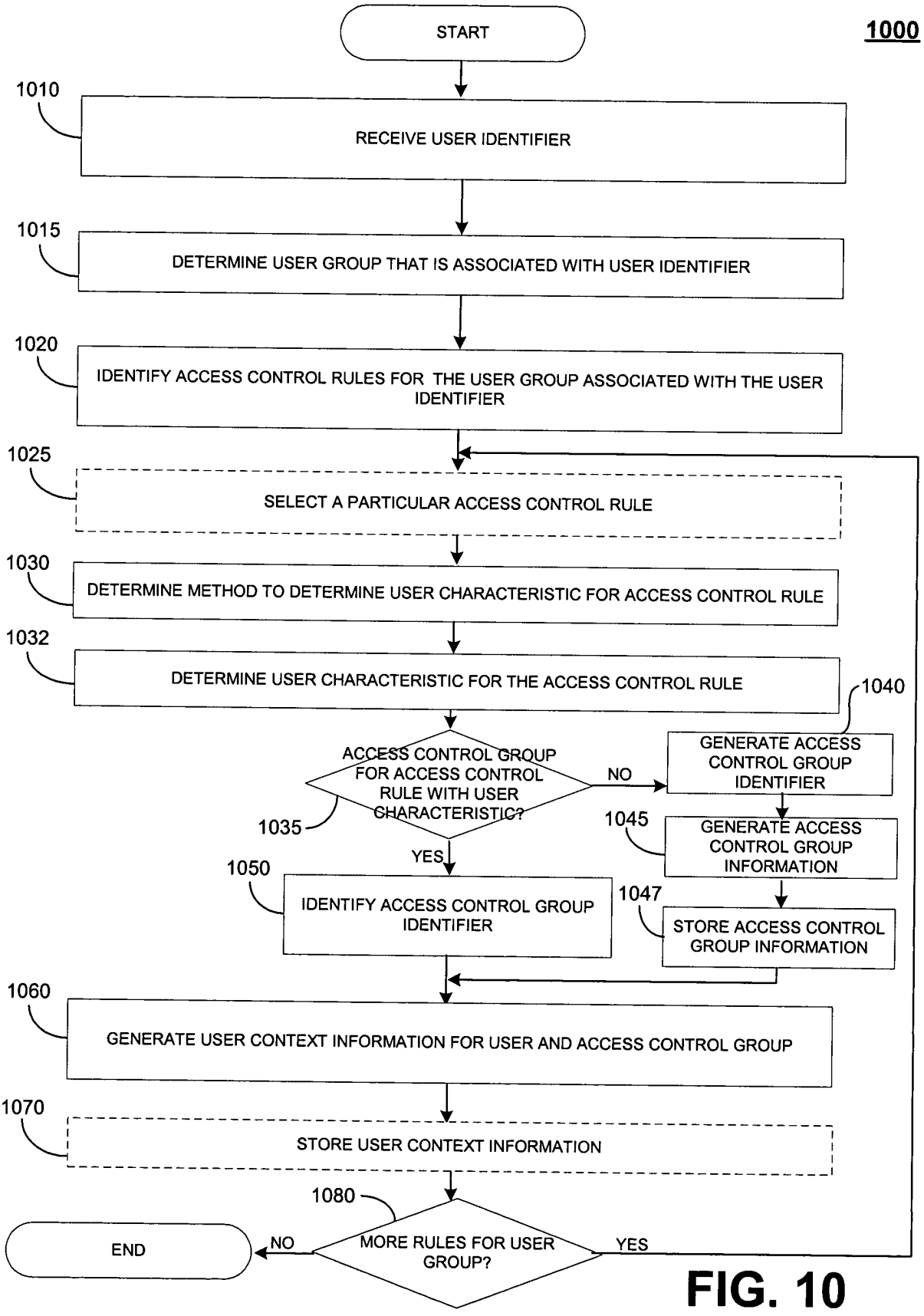
1000
START
1010
RECEIVE USER IDENTIFIER
1015
DETERMINE USER GROUP THAT IS ASSOCIATED WITH USER IDENTIFIER
1020
IDENTIFY ACCESS CONTROL RULES FOR THE USER GROUP ASSOCIATED WITH THE USER IDENTIFIER
1025
SELECT A PARTICULAR ACCESS CONTROL RULE
1030
DETERMINE METHOD TO DETERMINE USER CHARACTERISTIC FOR ACCESS CONTROL RULE
1032
DETERMINE USER CHARACTERISTIC FOR THE ACCESS CONTROL RULE
1035
ACCESS CONTROL GROUP FOR ACCESS CONTROL RULE WITH USER CHARACTERISTIC?
NO
1040
GENERATE ACCESS CONTROL GROUP IDENTIFIER
1045
GENERATE ACCESS CONTROL GROUP INFORMATION
1047
STORE ACCESS CONTROL GROUP INFORMATION
YES
1050
IDENTIFY ACCESS CONTROL GROUP IDENTIFIER
1060
GENERATE USER CONTEXT INFORMATION FOR USER AND ACCESS CONTROL GROUP
1070
STORE USER CONTEXT INFORMATION
1080
MORE RULES FOR USER GROUP?
NO
YES
END

FIG. 10

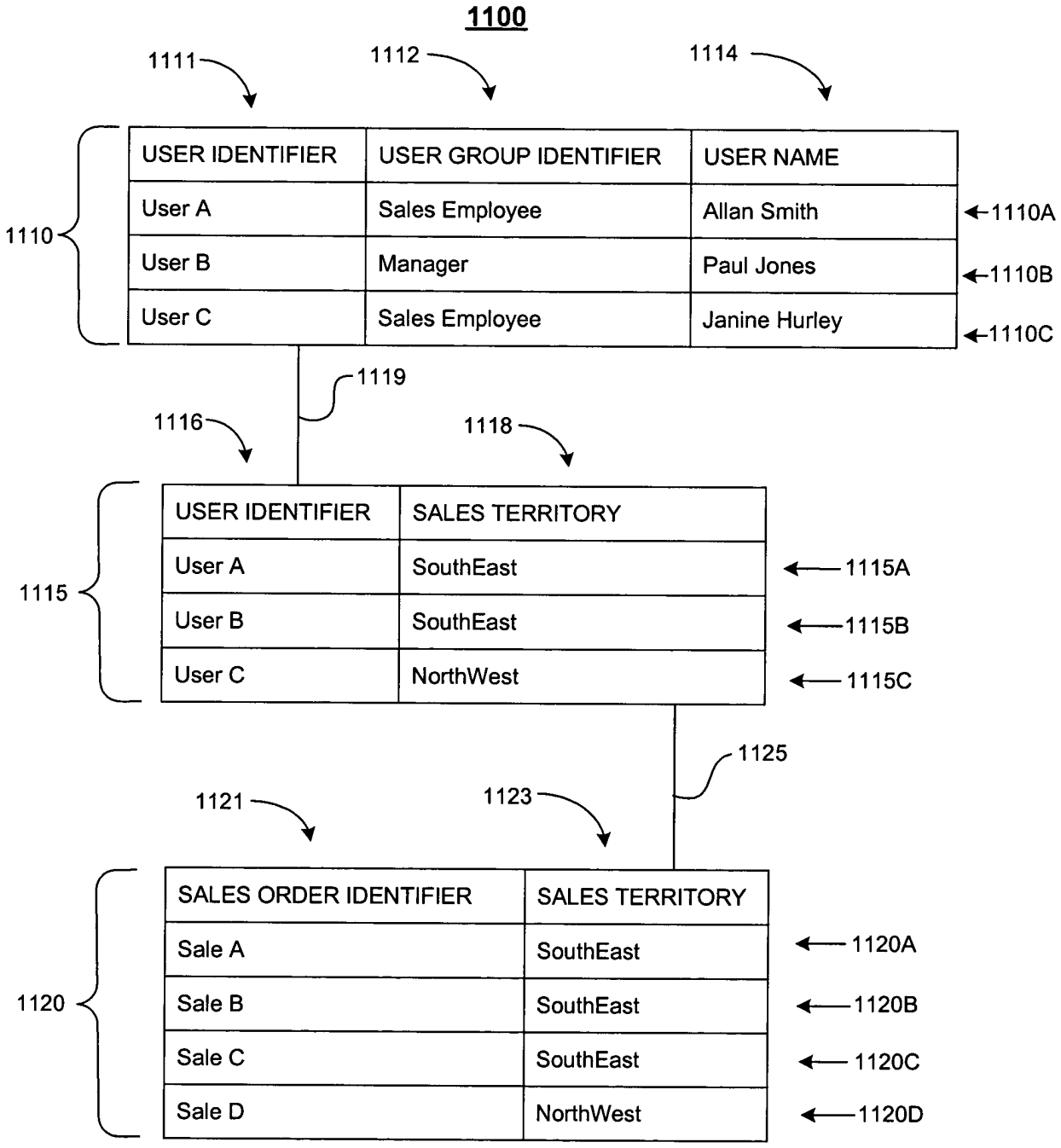
1100
1111
1112
1114
1110
USER IDENTIFIER
USER GROUP IDENTIFIER
USER NAME
User A
Sales Employee
Allan Smith
1110A
User B
Manager
Paul Jones
1110B
User C
Sales Employee
Janine Hurley
1110C
1119
1116
1118
1115
USER IDENTIFIER
SALES TERRITORY
User A
SouthEast
1115A
User B
SouthEast
1115B
User C
NorthWest
1115C
1125
1121
1123
1120
SALES ORDER IDENTIFIER
SALES TERRITORY
Sale A
SouthEast
1120A
Sale B
SouthEast
1120B
Sale C
SouthEast
1120C
Sale D
NorthWest
1120D

FIG. 11A

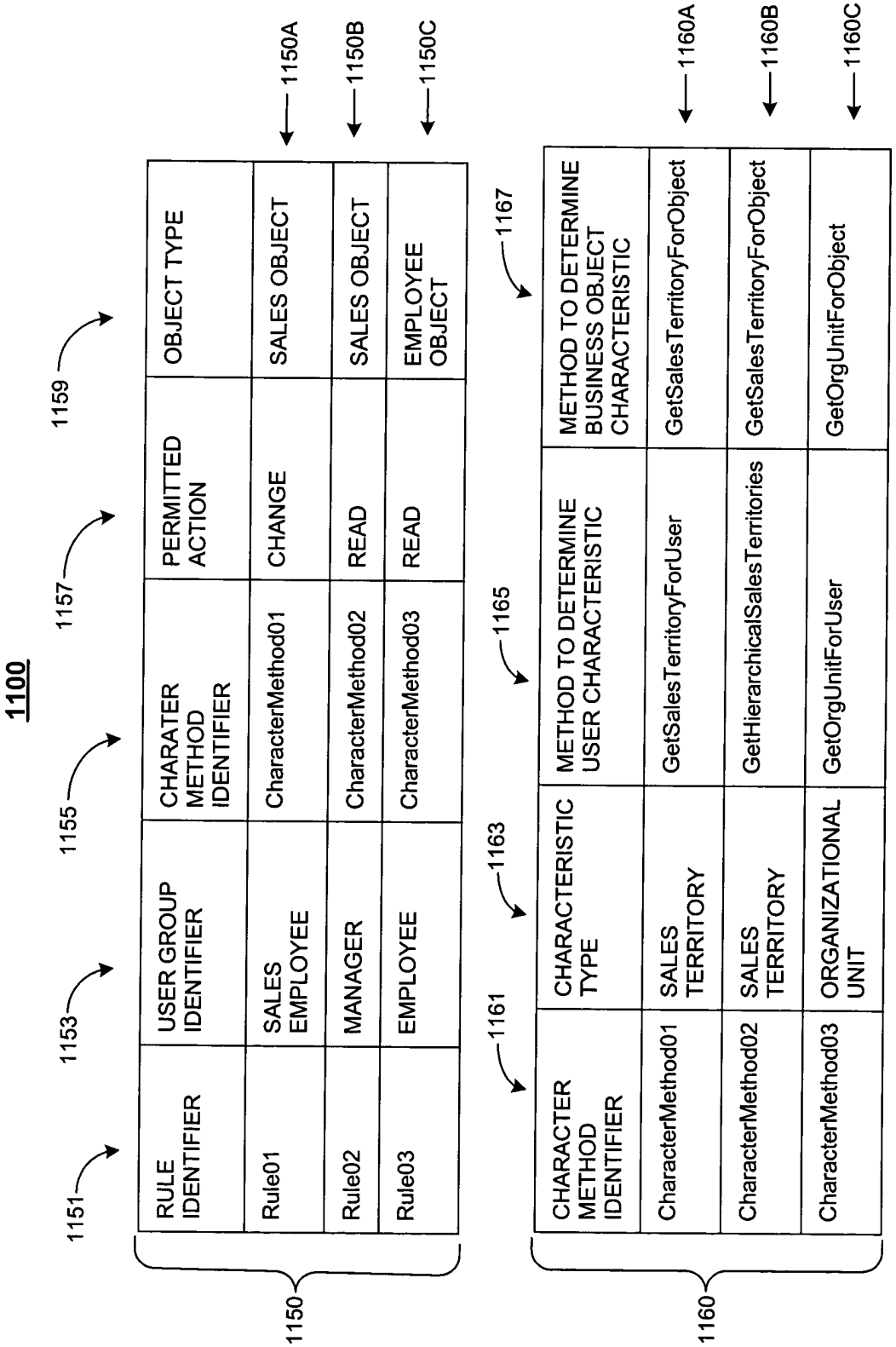
1100
1150
1151
1153
1155
1157
1159
RULE IDENTIFIER
USER GROUP IDENTIFIER
CHARATER METHOD IDENTIFIER
PERMITTED ACTION
OBJECT TYPE
Rule01
SALES EMPLOYEE
CharacterMethod01
CHANGE
SALES OBJECT
Rule02
MANAGER
CharacterMethod02
READ
SALES OBJECT
Rule03
EMPLOYEE
CharacterMethod03
READ
EMPLOYEE OBJECT
1150A
1150B
1150C
1160
1161
1163
1165
1167
CHARACTER METHOD IDENTIFIER
CHARACTERISTIC TYPE
METHOD TO DETERMINE USER CHARACTERISTIC
METHOD TO DETERMINE BUSINESS OBJECT CHARACTERISTIC
CharacterMethod01
SALES TERRITORY
GetSalesTerritoryForUser
GetSalesTerritoryForObject
CharacterMethod02
SALES TERRITORY
GetHierarchicalSalesTerritories
GetSalesTerritoryForObject
CharacterMethod03
ORGANIZATIONAL UNIT
GetOrgUnitForUser
GetOrgUnitForObject
1160A
1160B
1160C

FIG. 11B

1200

1240

1241 USER IDENTIFIER	1242 ACCESS CONTROL GROUP IDENTIFIER	
User A	ACgroup1	← 1240A
User B	ACgroup2	← 1240B
User C	ACgroup3	← 1240C

1270

1251 ACCESS CONTROL GROUP IDENTIFIER	1253 CHARACTERISTIC	1255 ACCESS CONTROL RULE IDENTIFIER	
ACgroup1	Sales Territory = SouthEast	Rule01	← 1250A
ACgroup2	Sales Territory = SouthEast	Rule02	← 1250B
ACgroup3	Sales Territory = NorthWest	Rule01	← 1250C
ACgroup4	Sales Territory = NorthWest	Rule02	← 1250D

1260

1275

1261 ACCESS CONTROL GROUP IDENTIFIER	1263 BUSINESS OBJECT IDENTIFIER	1265 PERMITTED ACTION	
ACgroup1	Sale A	Read, Write	← 1260A
ACgroup2	Sale A	Read	← 1260B
ACgroup1	Sale B	Read, Write	← 1260C
ACgroup2	Sale B	Read	← 1260D
ACgroup1	Sale C	Read, Write	← 1260E
ACgroup2	Sale C	Read	← 1260F
ACgroup3	Sale D	Read, Write	← 1260G
ACgroup4	Sale D	Read	← 1260H

FIG. 12

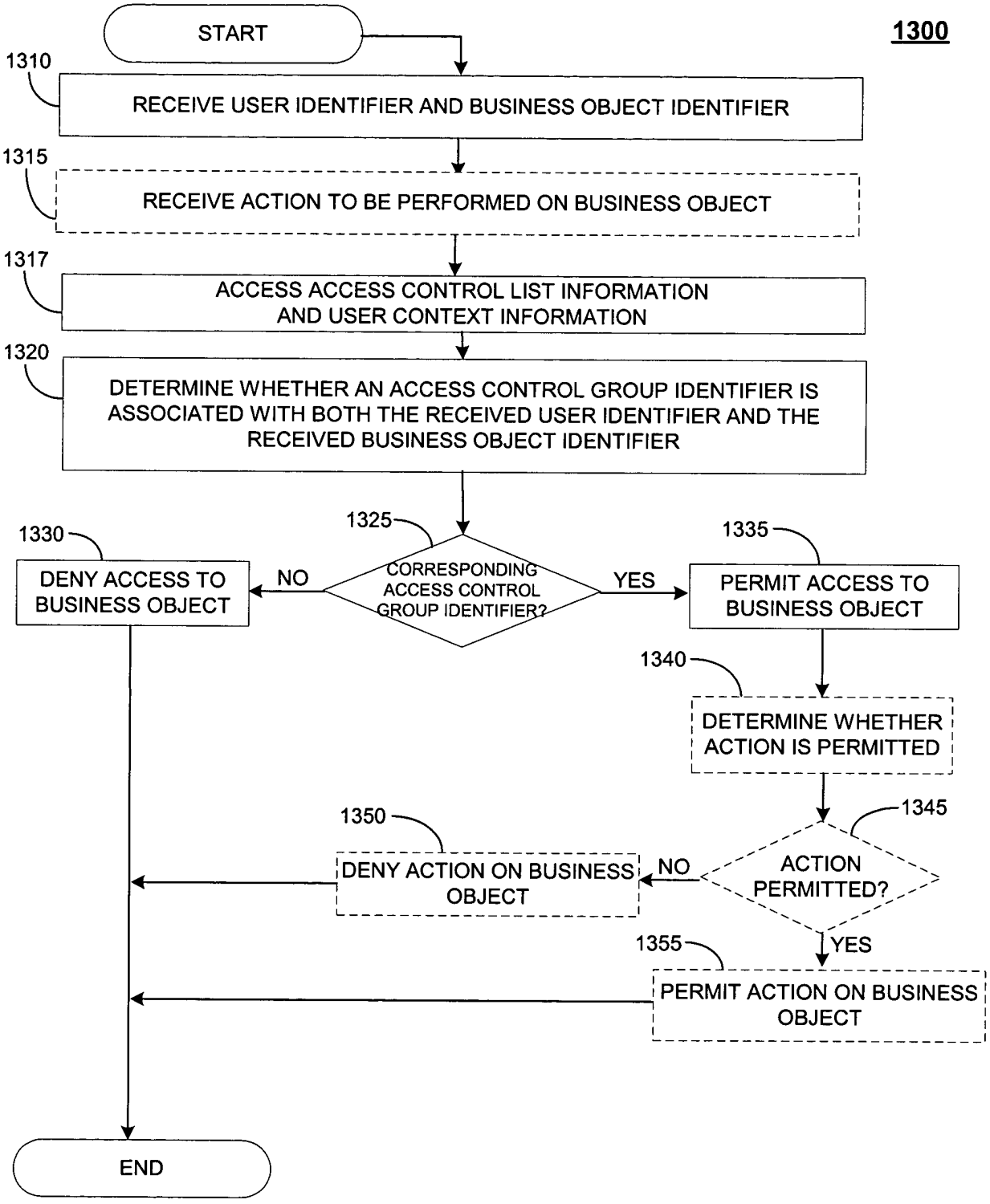
1300
START
1310
RECEIVE USER IDENTIFIER AND BUSINESS OBJECT IDENTIFIER
1315
RECEIVE ACTION TO BE PERFORMED ON BUSINESS OBJECT
1317
ACCESS ACCESS CONTROL LIST INFORMATION AND USER CONTEXT INFORMATION
1320
DETERMINE WHETHER AN ACCESS CONTROL GROUP IDENTIFIER IS ASSOCIATED WITH BOTH THE RECEIVED USER IDENTIFIER AND THE RECEIVED BUSINESS OBJECT IDENTIFIER
1325
CORRESPONDING ACCESS CONTROL GROUP IDENTIFIER?
NO
YES
1330
DENY ACCESS TO BUSINESS OBJECT
1335
PERMIT ACCESS TO BUSINESS OBJECT
1340
DETERMINE WHETHER ACTION IS PERMITTED
1345
ACTION PERMITTED?
NO
YES
1350
DENY ACTION ON BUSINESS OBJECT
1355
PERMIT ACTION ON BUSINESS OBJECT
END

FIG. 13